



MARK A. YOUNG  
EXECUTIVE DIRECTOR

# LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT



SERVING LOWELL  
CHELMSFORD  
DRACUT  
TEWKSBURY  
TYNGSBORO

August 10, 2020

**RE: MA0100633**

To Whom It May Concern:

The following is an itemization of status and improvements for the Lowell Regional Wastewater Utility during July 2020. Enclosed is a copy of the Discharge Monitoring Report, Down Stream Notification Reports, and required NPDES permit monitoring data for this period.

The Discharge Monitoring Report is being submitted electronically through the Environmental Protection Agency NetDMR website and also via email to the Massachusetts Department of Environmental Protection.

***PERMIT EXCEEDANCES:***

- There were no permit exceedances for the month of July 2020.

***PROCESS CHANGES AND IMPROVEMENTS:***

- The primary and secondary clarifiers are undergoing a complete upgrade as part of the phase 2B construction project. This has limited flow through the facility and impacted wet weather flow capacity.
  - Secondary Clarifier No.3 was taken offline on 7/2 and returned to service on 7/8 for construction.
  - Secondary Clarifier No.4 was taken offline on 7/12 and returned to service on 7/30 for construction.
- Anoxic periods in the last cell of the aeration trains have been enabled on 5/4 for NO<sub>3</sub> control.
- As of 6/23, an aeration tank is being taken offline during dry weather as it is not needed for processing in the warmer weather. The aeration tank is being brought back online for wet weather events; in order to maximize flow through the secondary treatment process.
- A new temporary Centrisys centrifuge was commissioned on 3/18. This has replaced the previous temporary Pace centrifuge. The new unit provides for a more reliable dewatering process and also produces a drier sludge cake.
- Thickened Waste Pump No.743 was replaced with a temporary progressive cavity pump on 4/2. This is being done to ensure stable and reliable thickened primary sludge pumping to the centrifuge is available.

- The sodium bisulfite feed system is being upgraded as part of the Phase 2B construction project. The system, including the pumps, was fully upgraded and brought online 1/10.
  - The new bisulfite feed system was turned off and operation of the old bisulfite feed system is being used until issues with the new feed system are resolved.

**ODOR COMPLAINTS:**

- There were no reported odor complaints during this period.

Respectfully,

A handwritten signature in black ink, appearing to read "Michael Cassidy", written in a cursive style.

Michael Cassidy, Assistant Operations Manager  
Lowell Regional Wastewater Utility  
First St. Blvd. (Rt. 110)  
Lowell MA 01850

## NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.

OMB No. 2040-0004

## DISCHARGE MONITORING REPORT (DMR)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: LOWELL REGIONAL WW UTILITY  
 ADDRESS: 451 FIRST ST BLVD  
 LOWELL, MA 01850  
 FACILITY: LOWELL REGIONAL WW UTILITY  
 LOCATION: 451 FIRST ST BLVD  
 LOWELL, MA 01850

ATTN: MICHAEL CASSIDY, ASST. OPERATIONS MANAGER

MA0100633  
 PERMIT NUMBER

035-A  
 DISCHARGE NUMBER

DMR MAILING ZIP CODE: 01850

MAJOR \$

(SUBR E)

TREATED EFFLUENT

External Outfall

MONITORING PERIOD			
MM/DD/YYYY		MM/DD/YYYY	
07/01/2020	FROM	07/31/2020	TO

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING				QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE 1	VALUE 2	VALUE 3	UNITS	VALUE 1	VALUE 2	VALUE 3	UNITS			
Oxygen, dissolved (DO)	SAMPLE MEASUREMENT	*****	*****	*****	*****	8.49	*****	*****	mg/L	0	01/01	GR
00300 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Daily	GRAB
pH	SAMPLE MEASUREMENT	*****	*****	*****	*****	6.6	*****	7.2	SU	0	01/01	GR
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	6.0 MINIMUM	*****	8.3 MAXIMUM	SU		Daily	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	1,283	2,420	6,063	lb/d	7.3	11.82	24.4	mg/L	0	05/07	24
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	8,006 MO AVG	12,010 WKLY AVG	Req. Mon. DAILY MX	lb/d	30 MO AVG	45 WKLY AVG	Req. Mon. DAILY MAX	mg/L		Weekdays	COMP24
Solids, total suspended	SAMPLE MEASUREMENT	*****	*****	*****	*****	231.7	*****	*****	mg/L	0	02/30	24
00530 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Twice per Month	COMP24
TSS % Removal	SAMPLE MEASUREMENT	*****	*****	*****	*****	97.2	*****	*****	%	0	01/30	CA
	PERMIT REQUIREMENT	*****	*****	*****	*****	85 MINIMUM	*****	*****	%		Monthly	CALC
Total Nitrogen	SAMPLE MEASUREMENT	*****	*****	*****	*****	21.63	*****	24.24	mg/L	0	01/07	CA
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon DAILY MAX	mg/L		Weekly	CALC
TKN	SAMPLE MEASUREMENT	*****	*****	*****	*****	20.00	*****	22.20	mg/L	0	01/07	24
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon DAILY MAX	mg/L		Weekly	COMP24
NO3,2-N	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.63	*****	3.04	mg/L	0	01/07	24
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon DAILY MAX	mg/L		Weekly	COMP24

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE
MICHAEL CASSIDY		978 674-4248		08/10/2020
ASST. OPERATIONS SUPERINTENDENT		AREA CODE	NUMBER	MM/DD/YYYY

TYPED OR PRINTED

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: LOWELL REGIONAL WW UTILITY  
 ADDRESS: 451 FIRST ST BLVD  
 LOWELL, MA 01850  
 FACILITY: LOWELL REGIONAL WW UTILITY  
 LOCATION: 451 FIRST ST BLVD  
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ATTN: MICHAEL CASSIDY, ASST. OPERATIONS MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.

OMB No. 2040-0004

MA0100633  
 PERMIT NUMBER

035-A  
 DISCHARGE NUMBER

DMR MAILING ZIP CODE: 01850

MAJOR \$

(SUBR E)

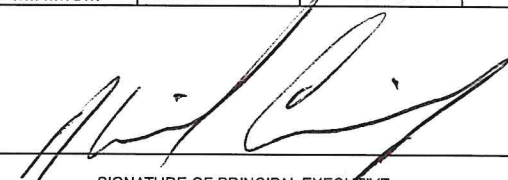
TREATED EFFLUENT

External Outfall

MONITORING PERIOD			
MM/DD/YYYY	FROM	TO	MM/DD/YYYY
	07/01/2020		07/31/2020

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING				QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE 1	VALUE 2	VALUE 3	UNITS	VALUE 1	VALUE 2	VALUE 3	UNITS			
Phosphorus, total (as P)	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.39	*****	2.24	mg/L	0	01/07	24
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon MO AVG	*****	Req. Mon. DAILY MX	mg/L		Weekly	COMP24
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT	26.68	20.20	41.30	MGD	*****	*****	*****	*****	0	99/99	RC
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	32 12MO AVG	Req. Mon MO AVG	Req. Mon. DAILY MX	MGD	*****	*****	*****	*****		Continuous	RCORDR
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	*****	57.42	*****	240	µg/L	0	01/01	GR
50060 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	196 MO AVG	*****	338 DAILY MX	µg/L		Daily	GRAB
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	*****	92.90	*****	240	µg/L	0	99/99	RC
50060 0 0 Intake	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon. DAILY MX	µg/L		Continuous	RCORDR
Ecoli	SAMPLE MEASUREMENT	*****	*****	*****	*****	8.78	*****	60	MPN	0	05/07	GR
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	126 MO GEO	*****	409 DAILY MX	MPN		Weekdays	GRAB
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	1,374	2,077	4,685	lb/d	8.1	10.58	25.7	mg/L	0	05/07	24
80082 1 0 Effluent Gross	PERMIT REQUIREMENT	6,672 MO AVG	10,675 WKLY AVG	Req. Mon. DAILY MX	lb/d	25 MO AVG	40 WKLY AVG	Req. Mon. DAILY MX	mg/L		Weekdays	COMP24
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	*****	*****	*****	*****	273.0	*****	*****	mg/L	0	02/30	24
80082 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Twice per Month	COMP24
BOD % Removal	SAMPLE MEASUREMENT	*****	*****	*****	*****	97.2	*****	*****	%	0	01/30	CA
Effluent	PERMIT REQUIREMENT	*****	*****	*****	*****	85 MINIMUM	*****	*****	%		Monthly	CALC

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE
MICHAEL CASSIDY		978 674-4248		08/10/2020
ASST. OPERATIONS SUPERINTENDENT		AREA CODE	NUMBER	MM/DD/YYYY
TYPED OR PRINTED		 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		

**Lowell Regional Wastewater Utility**

NPDES Report (Permit NO. MA0100633)

**July 2020**

Printed on Mon Aug 10 2020

Page 1 of 2

Date	Plant Effluent Flow			D.O.	Chlorine Residual	Chlorine Residual Continuous Recording		Plant Effluent pH			E-coli (cfu/100 ml)	Effluent CBOD			Effluent TSS		
	Total (MG)	Max. Hourly (MGD)	Min. Hourly (MGD)			Avg. (mg/L)	Max. (mg/L)	Min.	Max.	Grab		(mg/L)	(lbs)	(% Rem)	(mg/L)	(lbs)	(% Rem)
01-Wed	23.25	39.23	18.32	8.5	0.05	0.00	0.00	6.4	6.6	7.0	4	4.2	814.3		2.6	504.1	
02-Thu	22.67	43.43	13.40	8.6	0.00	0.00	0.02	6.5	6.6	7.0	3						
03-Fri	19.80	27.23	13.39	8.6	0.04	0.00	0.00	6.5	6.6	7.2							
04-Sat	17.96	23.64	11.96	8.1	0.02	0.01	0.03	6.5	6.6	7.1	5	5.1	763.9	97.95	2.8	419.4	99.0
05-Sun	18.89	41.09	12.20	8.4	0.02	0.03	0.06	6.5	6.6	7.2		7.3	1,149.8		6.1	960.8	
06-Mon	21.69	44.52	11.97	8.4	0.11	0.00	0.04	6.4	6.6	6.9	5	7.6	1,374.9		5.1	922.6	
07-Tue	18.29	22.27	12.71	8.4	0.01	0.02	0.05	6.5	6.6	7.2	4	9.0	1,372.9	97.51	5.3	808.5	97.9
08-Wed	19.10	30.83	10.95	8.6	0.10	0.05	0.06	6.5	6.8	7.1	17	9.0	1,433.6		6.5	1,035.4	
09-Thu	18.81	22.98	12.76	8.3	0.24	0.05	0.06	6.5	6.7	7.0	11	7.6	1,192.5	95.38	5.3	831.6	98.0
10-Fri	18.33	21.68	12.03	8.4	0.16	0.04	0.06	6.5	6.6	7.2	13						
11-Sat	18.72	25.20	11.46	8.2	0.08	0.05	0.06	6.5	6.6	7.1							
12-Sun	18.16	23.08	11.42	8.3	0.00	0.04	0.06	6.5	6.6	7.1		5.4	817.9	98.20	4.3	651.3	98.5
13-Mon	20.10	29.79	11.67	8.5	0.00	0.02	0.05	6.5	6.6	7.1	7	5.9	989.2		5.5	922.2	
14-Tue	18.21	22.36	11.63	9.6	0.00	0.03	0.06	6.5	6.6	7.0	10	4.3	653.1		4.0	607.5	
15-Wed	17.48	21.88	11.78	8.9	0.05	0.00	0.00	6.5	6.7	7.2	5	3.8	554.0		4.3	626.9	
16-Thu	17.54	21.65	11.44	9.0	0.00	0.00	0.08	6.4	6.8	7.1	7	25.7	3,759.1	92.08	24.4	3,568.9	91.8
17-Fri	27.37	93.93	11.69	8.7	0.01	0.02	0.15	6.5	6.7	6.7							
18-Sat	17.58	22.31	11.26	8.4	0.02	0.00	0.02	6.6	6.7	7.1	2						
19-Sun	17.77	22.83	10.74	8.5	0.00	0.04	0.06	6.5	6.7	6.9		7.0	1,037.2	96.65	9.7	1,437.2	95.0
20-Mon	18.00	21.94	11.47	8.3	0.00	0.06	0.07	6.6	6.7	6.9	60	5.0	750.8	98.29	5.9	885.9	97.2
21-Tue	17.40	21.75	11.07	8.5	0.01	0.05	0.06	6.6	6.7	6.9	11	5.2	754.8	98.36	5.3	769.3	97.5
22-Wed	17.14	60.11	10.70	8.4	0.14	0.06	0.19	6.2	7.4	6.9	12	22.1	3,159.5		20.6	2,945.1	
23-Thu	41.30	62.36	18.81	8.3	0.11	0.03	0.16	6.5	6.9	6.6	46	13.6	4,684.8		17.6	6,062.6	
24-Fri	20.95	24.52	14.73	8.7	0.08	0.07	0.19	6.6	6.9	6.6	28						
25-Sat	20.40	24.83	14.02	8.5	0.04	0.17	0.22	6.8	6.9	7.2							
26-Sun	20.18	24.64	12.83	8.8	0.02	0.09	0.24	6.7	14.0	7.2		4.6	774.1	98.42	4.6	774.1	98.2
27-Mon	20.67	25.00	14.06	7.8	0.02	0.08	0.15	6.8	7.0	7.1	4	5.0	862.1	98.47	4.9	844.9	98.2
28-Tue	20.09	24.29	13.91	8.1	0.12	0.14	0.17	6.8	6.9	7.1	8	7.2	1,206.1	97.48	4.7	787.3	98.2
29-Wed	18.84	23.22	12.09	8.6	0.13	0.14	0.18	6.7	6.9	7.1	5	7.3	1,146.8	97.53	6.8	1,068.2	97.3
30-Thu	20.13	25.11	13.88	8.3	0.18	0.14	0.16	6.7	6.8	7.0	18	5.8	973.5		4.7	788.9	
31-Fri	19.47	22.75	13.16	8.4	0.02	0.15	0.17	6.8	6.9	7.2	12						
Min	17.14	21.65	10.70	7.8	0.00	0.00	0.00	6.2	6.6	6.6	2	3.8	554	92.1	2.6	419	91.8
Max	41.30	93.93	18.81	9.6	0.24	0.17	0.24	6.8	14.0	7.2	60	25.7	4,685	98.5	24.4	6,063	99.0
Avg	20.20	30.98	12.69	8.5	0.06	0.051	0.09				13	8.1	1,374	97.2	7.3	1,283	97.2
Total	626.29									9			30,225			28,223	

**Lowell Regional Wastewater Utility**

NPDES Report (Permit NO. MA0100633)

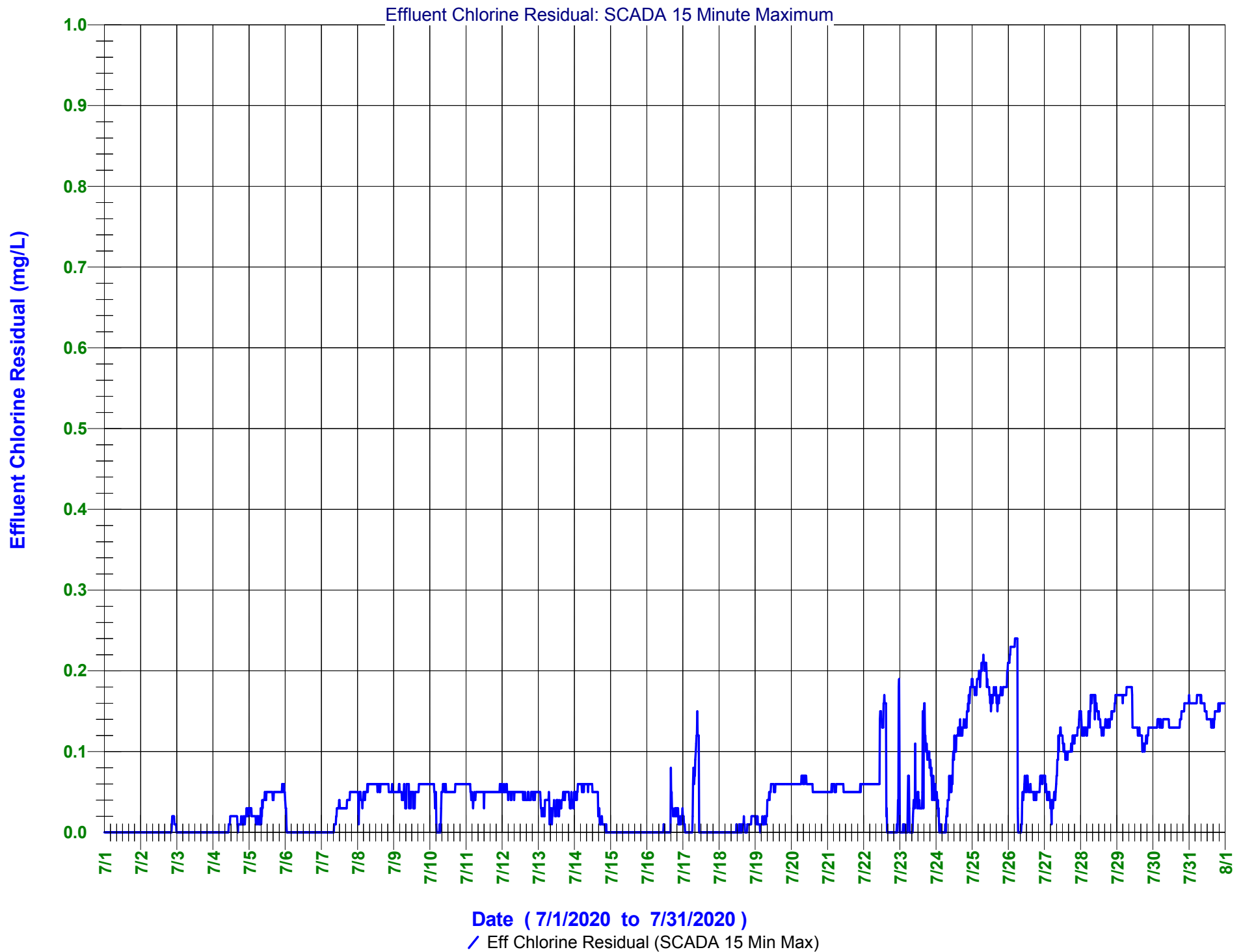
**July 2020**

Printed on Mon Aug 10 2020

Page 1 of 2

Date	Total Nitrogen	TKN	Nitrate + Nitrite	Total Phosphorus
	(mg/L)	(mg/L)	(mg/L)	(mg/L)
01-Wed				
02-Thu				
03-Fri				
04-Sat				
05-Sun				
06-Mon				
07-Tue	24.24	21.20	3.04	2.24
08-Wed				
09-Thu				
10-Fri				
11-Sat				
12-Sun				
13-Mon	23.64	22.20	1.44	1.72
14-Tue				
15-Wed				
16-Thu				
17-Fri				
18-Sat				
19-Sun				
20-Mon	20.96	20.20	0.76	0.93
21-Tue				
22-Wed				
23-Thu				
24-Fri				
25-Sat				
26-Sun				
27-Mon	17.68	16.40	1.28	0.67
28-Tue				
29-Wed				
30-Thu				
31-Fri				
Min	17.68	16.40	0.76	0.67
Max	24.24	22.20	3.04	2.24
Avg	21.63	20.00	1.63	1.39
Total	86.52	80.00	6.52	5.56

## Lowell Regional Wastewater Utility - MA0100633



# Lowell Wastewater Utility

## Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Jul 17, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
30.15	97.13	106.30

	Rainfall			
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
River's Edge	0.44	3	0.36	0.15
Warren				

*Rain data may be inaccurate during cold weather*

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
2.65	4.43

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)
0.47	0.50

Person Reporting Event: Gordon Bergeron - Lowell Water Engineering

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Jul 17, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00	36	1.27	
09:00	60	2.14	
10:00	43	0.92	
11:00	20	0.10	
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	159	4.43	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Jul 17, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00	28	0.26
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	28	0.26

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Jul 17, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00	15	0.24	
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	15	0.24	

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

# Lowell Wastewater Utility

## Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Jul 17, 2020

### Definitions and Abbreviations:

#### Flow Reporting Terms:

**MG:**

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

**MGD:**

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

**Daily Flow Rate, million gallons per day (MGD):**

Million gallons of flow treated at Duck Island

**Peak Hourly Flow Rate (MGD):**

The highest flow rate treated at Duck Island over a rolling one-hour period

**Instantaneous Peak Flow Rate (MGD):**

The highest flow rate treated at Duck Island at any moment of the day

**Duration (Minutes):**

Number of minutes in a given hour or over the course of the day a flow was measured

#### Weather Reporting Terms:

**Rainfall Measurement:**

Rainfall is measured by Lowell's network of rain gauges

**Daily Rainfall, inches (in):**

The total depth of rainfall measured by each rain gauge over the course of the day

**Maximum Hourly Rainfall (in/hr):**

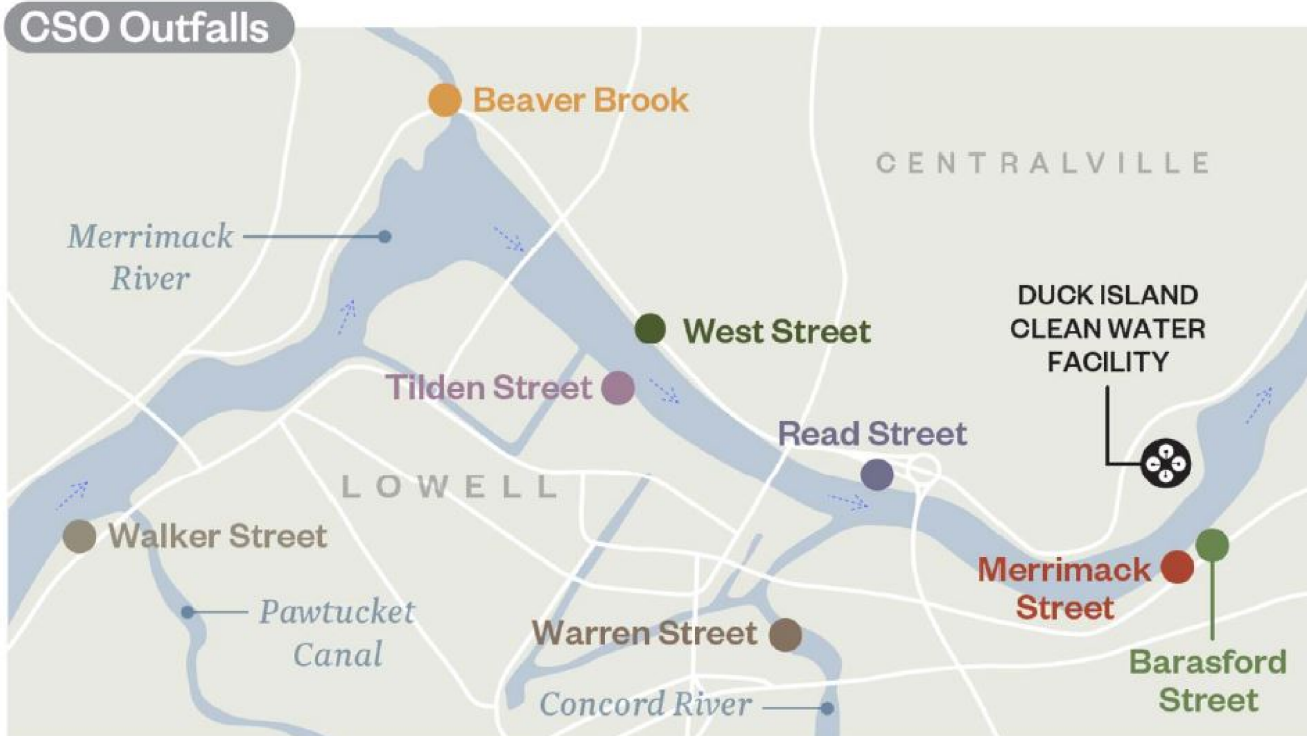
The greatest total depth of rainfall measured by a rain gauge in one hour

**Peak Intensity, inches per 15 minutes (in/15-min):**

The greatest total depth of rainfall received in any 15-minute period.

**Duration (Hour):**

The number of hours in the day during which it rained.



# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Wed, Jul 22, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
22.45	64.97	119.96

	Rainfall			
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
River's Edge	1.06	6	0.73	0.37
Warren				

*Rain data may be inaccurate during cold weather*

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
0.17	0.72

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)
0.65	14.53

Person Reporting Event: Gordon Bergeron - Lowell Water Engineering

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Wed, Jul 22, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00	10	0.72	

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	39	0.93

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	22	0.16

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	10	0.72	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	39	0.93

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	22	0.16

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Wed, Jul 22, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	23	1.56

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	7	0.04

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	34	1.14

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	23	1.56

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	7	0.04

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	34	1.14

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Wed, Jul 22, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	34	2.73

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00	39	6.47	

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00	20	1.50

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	34	2.73

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	39	6.47	

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	20	1.50

# Lowell Wastewater Utility

## Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Wed, Jul 22, 2020

### Definitions and Abbreviations:

#### Flow Reporting Terms:

##### MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

##### MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

##### Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

##### Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

##### Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

##### Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

#### Weather Reporting Terms:

##### Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

##### Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

##### Maximum Hourly Rainfall (in/hr):

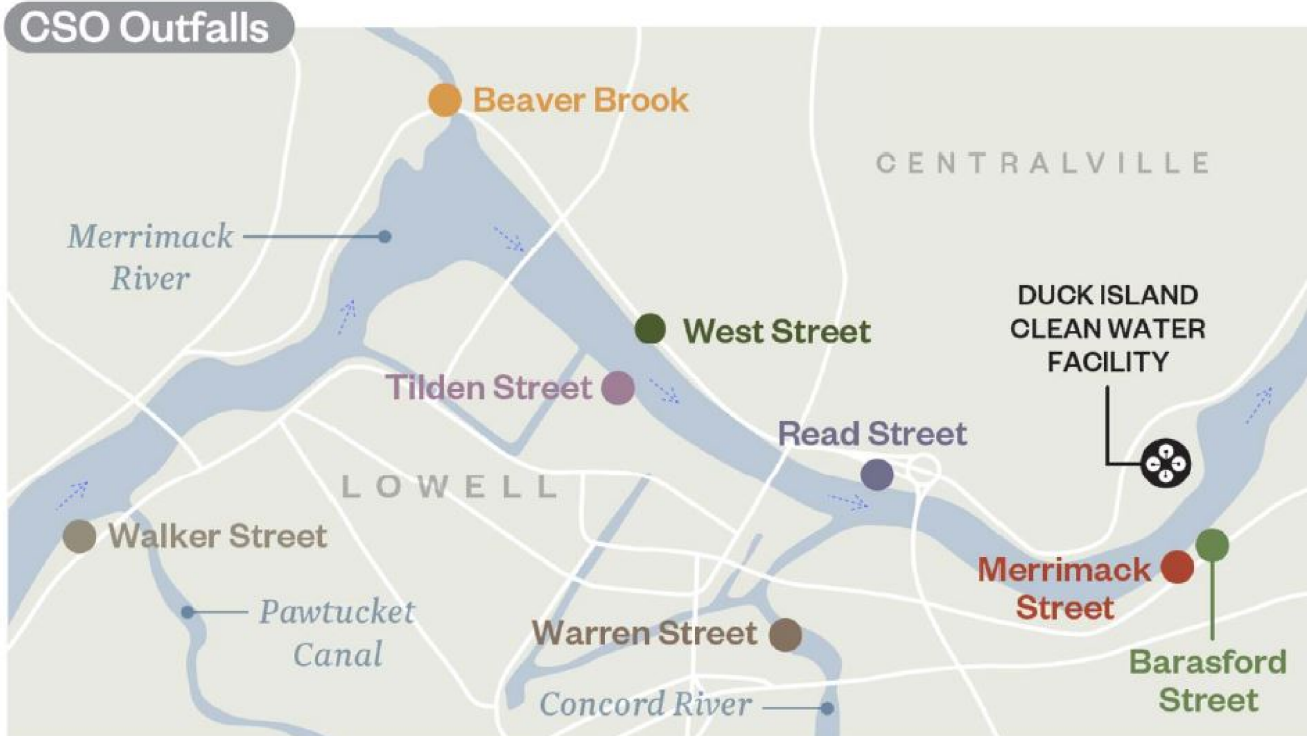
The greatest total depth of rainfall measured by a rain gauge in one hour

##### Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

##### Duration (Hour):

The number of hours in the day during which it rained.



# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Thu, Jul 23, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
41.53	67.95	118.05

	Rainfall			
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
River's Edge	0.76	4	0.72	0.43
Warren				

*Rain data may be inaccurate during cold weather*

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
9.50	5.18

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)
2.47	13.12

Person Reporting Event: Gordon Bergeron - Lowell Water Engineering

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Thu, Jul 23, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00	31	0.37	
03:00	60	0.43	
04:00	60	0.38	
05:00	60	0.31	
06:00	10	0.03	
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00	25	0.38	
17:00	60	0.62	
18:00	60	0.69	
19:00	60	0.71	
20:00	60	0.66	
21:00	60	0.50	
22:00	24	0.10	
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00	16	0.37
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00	15	0.05
02:00	1	0.01
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00	39	0.50
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	570	5.18	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	16	0.37

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	55	0.56

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Thu, Jul 23, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00	52	2.22
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00	27	1.87
17:00	29	1.36
18:00	20	0.31
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00	4	0.01
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00	14	0.14
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00	45	0.92
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	128	5.76

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	4	0.01

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	59	1.06

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Thu, Jul 23, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00	8	0.02	
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00	46	1.94	
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00	40	1.40
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00	34	2.00
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	54	1.96	

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	74	3.40

# Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Thu, Jul 23, 2020

## Definitions and Abbreviations:

### Flow Reporting Terms:

#### MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

#### MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

#### Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

#### Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

#### Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

#### Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

### Weather Reporting Terms:

#### Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

#### Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

#### Maximum Hourly Rainfall (in/hr):

The greatest total depth of rainfall measured by a rain gauge in one hour

#### Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

#### Duration (Hour):

The number of hours in the day during which it rained.

